

Proposed Plan

Old Southington Landfill Superfund Site Southington, CT

The Proposed Plan At A Glance

After careful study of the impacts of groundwater contamination at the Old Southington Landfill site, and in consideration of the contaminant reduction accomplished by the remedy under the 1994 Record of Decision, EPA proposes the following plan:

- Institutional Controls to prevent potential human exposure to vapor that could seep into buildings from contaminated groundwater.
- Long term Groundwater Monitoring.
- Installation of building ventilation to prevent migration of volatile organic compound (VOC) vapors into impacted existing buildings.
- Five-year reviews to evaluate the effectiveness and adequacy of the remedial measure.
- Finalize the decision made in the 1994 Record of Decision.

A more detailed description of the proposed plan begins on page 4.

What do you think?

EPA is accepting public comment on this proposal from **June 22, 2006 through July 24, 2006**. You do not have to be a technical expert to comment. If you have a concern or preference regarding EPA's proposed cleanup plan, EPA wants to hear from you before making a final decision on how to protect your community.

Learn about EPA's Proposed Plan at a public information meeting that will include a presentation describing the proposed plan, followed by a question and answer session.

Wednesday, June 21, 2006 at 6:30 p.m.
Southington Town Hall - Council Chamber
75 Main Street
Southington, CT

A second meeting will be held on July 6 to provide an opportunity for citizens and local officials to offer oral or written comments at a formal public hearing.

Thursday, July 6, 2006 at 6:30 p.m.
Southington Library and Museum
255 Main Street
Southington, CT

If you are unable to attend the public hearing, you may also submit written comments - see page 14 to find out how. For further information about these meetings, call Jim Murphy of EPA's Community Affairs office at (617) 918-1028, or toll-free at 1-888-372-7341.

Introduction

This Proposed Plan is being issued in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (Section 117) [the law that established the Superfund Program], and the National Contingency Plan Section 300.430(f)(2).

In September 1994, EPA issued the first Record of Decision (ROD) for the Old Southington Landfill Superfund Site. The ROD required that the residential and commercial facilities on the landfill be relocated and that a cap be placed over the landfill. The landfill cap was completed in 2001. The ROD also required that additional groundwater investigations be undertaken to more fully assess the contaminated groundwater that extends over one half mile from the landfill to the Quinnipiac River (see figure 3 on page 9 for illustration of groundwater plume). Supplemental groundwater investigations began in 1999 and were completed in 2005. *The Supplemental Remedial Investigation Report, May 2006*, describes the work completed and provides the findings of the groundwater investigations since the 1994 ROD. Based on this information, an *Amended Feasibility Study, May 2006*, was prepared to develop and evaluate remedial alternatives to address the remaining threat to human health risk from the site: vapor emissions that may be migrating from the shallow groundwater plume into commercial buildings directly west across Old Turnpike Road, which is part of the Administrative Record. Both reports referenced above are contained in the Administrative Record, located in the Southington Public Library and at the EPA office in Boston. The Administrative Record is a collection of documents generated during the investigation of the Old Southington Landfill Site that form the basis for selection of the remedy.

This Proposed Plan summarizes parts of the *Supplemental Remedial Investigation Report* and the *Amended Feasibility Study*. The remedy that will be selected by EPA following public review and comment is intended to be the final action for the Old Southington Landfill Superfund Site. The remedy will be formalized in a *final* Record of Decision by the end of September 2006.

Both the earlier cleanup under the 1994 Record of Decision and the additional investigations since the landfill cap was completed in 2001 are discussed on page 3.

Background & History

The 13 acre Old Southington Landfill Superfund Site is located in the Plantsville Section of the Town of Southington, Connecticut and is defined as the area encompassed by the landfill cap and bordered on the west by Old Turnpike Road, and on the north by Rejean Road (Figure 1). Along its northeastern boundary, the Site is bordered by Black Pond, a fresh water body. Residential areas are located immediately

north of the Site along Rejean Road and to the south of the Site along Old Turnpike Road. A commercial auto salvage yard lies immediately to the west of the Site across Old Turnpike Road. A commercial storage facility and a construction company are located immediately east of the southern portion of the landfill. Figure 1 presents the overall study area including the Site, as defined above, and the area to the west traversed by the downgradient groundwater plume.

The Old Turnpike Landfill operated as a municipal and industrial waste landfill between 1920 and 1967. During that period, mixed residential, commercial, and industrial solid and liquid wastes were disposed of at the landfill. The northern area of the landfill was primarily used for the disposal of wood and construction debris. The southern area of the landfill received municipal commercial and industrial waste materials.

Two areas in the southern portion of the landfill, identified as the semi-solid disposal areas, received aqueous, semi-solid and semi-liquid wastes. In 1967, the Town of Southington closed the landfill and placed an approximately two-foot deep soil cover over the Site. In 1979, the Connecticut Department of Public Health closed municipal Production Well #5. From the early 1970s to the 1980s, the landfill area was subdivided and developed into residential, commercial, and industrial properties. Residential homes occupied portions of the northern part of the landfill.

In February 1980, EPA authorized an investigation aimed at defining the nature and extent of contamination in groundwater in the area around Well No. 5. Analysis of groundwater samples collected from two monitoring wells indicated the presence of volatile organic compounds (VOCs). VOCs are chemicals that evaporate readily to the atmosphere which are used in paints, plastics, solvents, and other products. In November 1980, the Connecticut Department of Environmental Protection (CT DEP) collected soil samples from a manhole excavation within the industrial park previously located on the landfill. Analysis of the soil samples indicated the presence of chlorinated and non-chlorinated VOCs.

Based on the above findings and a hazard ranking performed in 1982, EPA, on September 8, 1983, proposed that the Old Turnpike Landfill be placed on the National Priorities List (NPL), commonly known as the Superfund list. On September 21, 1984, the Old Turnpike Landfill was listed on the NPL as the Old Southington Landfill Superfund Site. In September 1987, potentially responsible parties (PRPs) entered into an Administrative Order on Consent (Order) with EPA to perform a Remedial Investigation and Feasibility Study (RI/FS). The RI/FS was completed in 1993.

1994 Record of Decision

The 1994 ROD addressed the contamination at the landfill and required the following actions:

- ◆ permanent relocation of all on-site homes and businesses
- ◆ covering the entire landfill with an impermeable cap (the northern portion of the cap provides passive recreation to the public, the southern portion of the cap has restricted access to the public.)
- ◆ excavation and placement of a highly contaminated "hotspot" area in a lined cell which was placed under the cap and above the water table
- ◆ installation and monitoring of a landfill gas collection system under the landfill cap
- ◆ long-term monitoring of groundwater to determine cap effectiveness
- ◆ sediment and surface water sampling at Black Pond and Unnamed Stream
- ◆ implementation of institutional controls to prevent damage to the cap and exposure to contaminated soils and groundwater at the landfill
- ◆ Five Year Reviews to insure that all remedy components remain protective of human health and the environment.

The 1994 ROD also required that additional groundwater investigations be conducted to define the boundary of the groundwater plume and determine if the plume is impacting human health or interacting with any natural resource areas.

The 1994 ROD did not make a final decision regarding whether the cap and gas collection system would function as intended. This will be addressed in the final 2006 ROD.

Supplemental Investigations, 1999 - 2005

The principal components of the activities during this time (described in Section 2 of the *Supplemental Remedial Investigations Report*) were investigations to evaluate the bedrock aquifer, characterize groundwater flow and chemistry to define the plume, assess whether groundwater was impacting other media (surface water, sediments), and evaluate vapor intrusion. Under these investigations, the following activities were completed:

- ◆ Eighty (80) new groundwater sampling points were installed at 48 locations
- ◆ Two Study Area-wide hydraulic surveys were completed
- ◆ More than 800 groundwater samples were collected for laboratory analyses
- ◆ Two additional groundwater receptor studies were completed
- ◆ Three additional Black Pond surface water and sediment sampling events were completed
- ◆ Three (3) extensive microwell surveys were conducted

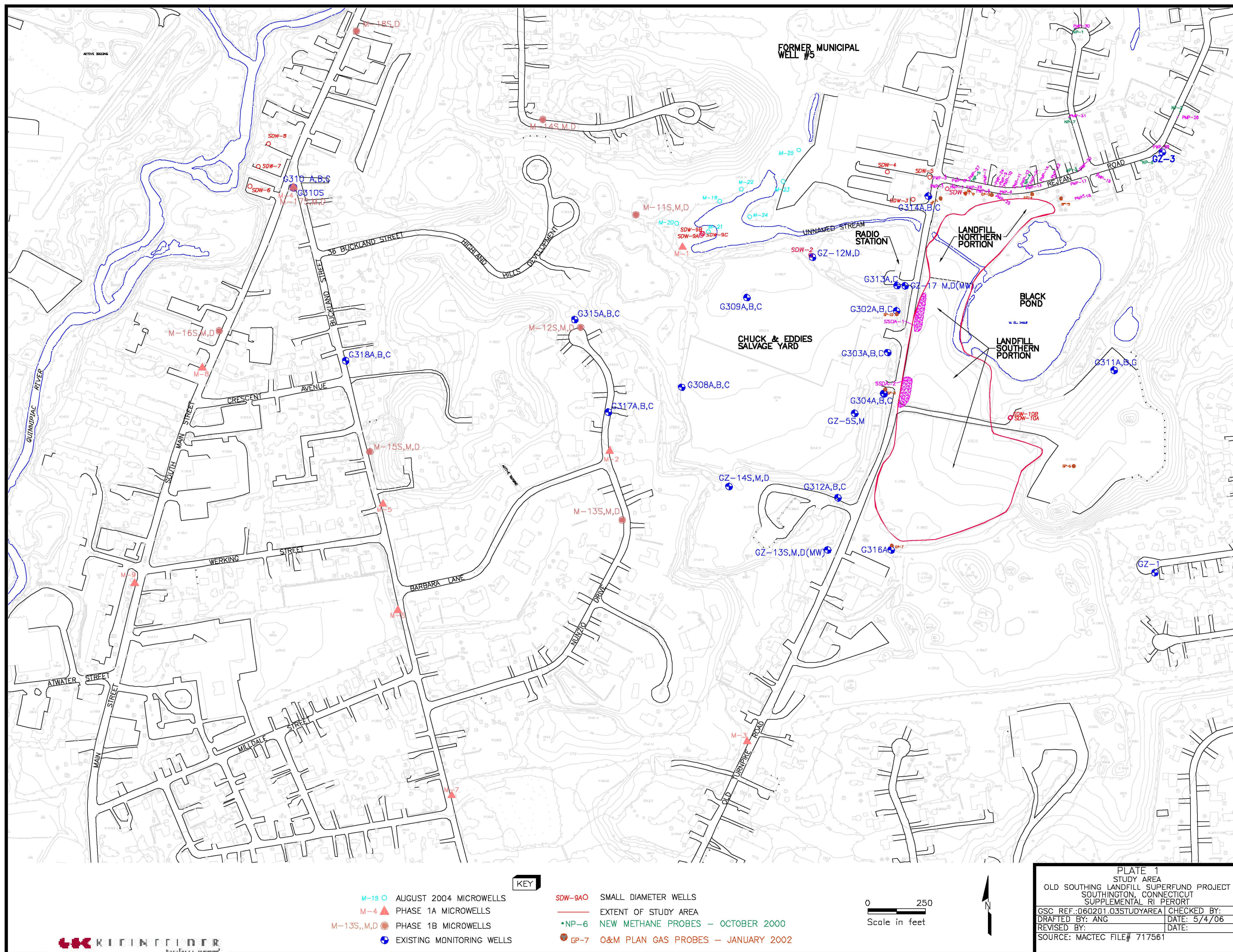
- ◆ Twenty (20) groundwater sampling events were completed.

In addition, ongoing environmental sampling work as part of the Operation and Maintenance (O&M) program for the landfill cap includes monitoring of landfill gas vents, and methane monitoring in the residential area immediately north of the landfill along Rejean Road.

Current land use for the area around the Old Southington Superfund Site continues to include residential, commercial, and industrial buildings. Groundwater downgradient of the Old Southington Site and west of Old Turnpike Road has been reclassified as GB (presumed not suitable for human consumption without treatment) by the Connecticut Department of Environmental Protection (CT DEP) and is no longer used as a drinking water source.

Site History

Event	Date
Old Turnpike Landfill accepts mixed residential, commercial, and industrial waste. Town of Southington closes Old Turnpike Landfill	1920-1967
Connecticut Department of Public Health and Addiction Services initiates groundwater sampling at Municipal Production Well #5	1978
Connecticut Department of Public Health closes municipal groundwater Production Well #5	1979
EPA initiates hydrogeologic investigations around the landfill area	1980
Old Southington Landfill Site placed on the NPL	1984
Administrative Order by Consent issued by EPA	1987
Remedial Investigation/Feasibility Study Report and Risk Assessment completed	1993
EPA issues Addendum to RI/FS Report	1994
Record of Decision (ROD) issued by EPA	1994
Consent Decree between EPA and Performing Settling Defendants (PRPs) lodged	1998
Supplemental Groundwater Investigations initiated	1999
100% Remedial Design Report for Landfill Cap completed	2000
Landfill Cap construction initiated	2000
Long-Term Groundwater Monitoring Program initiated	2000
Landfill Cap construction completed;	2001
Landfill Operation & Maintenance Program initiated	2001
Five Year Review completed	2005
Supplemental Remedial Investigation Report for groundwater completed	2006
Amended Feasibility Study completed	2006



Why is Additional Action Needed?

During the initial 1993 Remedial Investigation (RI), a risk assessment was conducted to determine if there were risks to human health and or the environment. The results of this risk assessment and subsequent investigations are as follows:

- ◆ Contaminants at the landfill in the subsurface soil were found to pose a significant risk to human health. As a result, the landfill was capped to prevent exposure to these soils.
- ◆ The cap was vented to allow landfill gas to travel up through the vents and disperse into the atmosphere.
- ◆ Surface water and sediment sampling at Black Pond located east and adjacent to the landfill and at the Unnamed Stream which is located west and across Old Turnpike Road from the site did not indicate an unacceptable risk to human health or to the environment.
- ◆ In 1993, CT Dept. of Health performed a fish evaluation from Black Pond and found the fish were not adversely impacted by contaminants from the site.
- ◆ Groundwater at and down gradient (west and southwest) of the site is contaminated. People in this area are connected to municipal water and since they are not exposed to groundwater via ingestion or dermal contact, there is no risk to human health via these pathways.

In conjunction with the 2006 Supplemental Groundwater Investigations report, a risk evaluation was conducted for the vapor intrusion pathway, an area that was not addressed in the 1993 RI. Recent confirmatory sampling did not show a risk at Black Pond or at the Unnamed Stream. Recent risk evaluation on the landfill gas did not show an unacceptable risk to on-site workers or the near-by community. Recent sampling did not show impacts to Black Pond, the Unnamed Stream, or the Quinnipiac River.

Groundwater sampling revealed a potential threat to human health should groundwater contamination volatilize into commercial buildings located west of Old Turnpike Road. This potential threat occurs in situations where VOCs are present in shallow groundwater at high concentrations. As a result, the Amended Feasibility Study and Proposed Plan are limited to addressing contaminants in groundwater which have the potential to migrate into indoor environments in excess of volatilization criteria established by CT DEP.

For purposes of the Amended Feasibility Study, the preliminary remediation goals are the identified volatilization criteria in the CT RSRs (see box below). VOCs are present in groundwater primarily in the middle to deep portions of the aquifer and therefore do not present an unacceptable risk to inhabitants of buildings over this portion of the groundwater. VOCs are present in shallow groundwater in only relatively limited areas of the Site. VOCs in shallow groundwater in excess of the CT RSRs residential or commercial/industrial volatilization criteria have been found in limited areas immediately to the west of Old Turnpike Road (see figure 2).

An extensive shallow groundwater VOC sampling and analysis effort was completed in the late fall 2005 on the commercial properties immediately downgradient of the Site to carefully define the extent of areas where criteria are exceeded. Based on that sampling and analysis effort, areas where residential or commercial/industrial volatilization criteria may be exceeded have been delineated as illustrated in Figure 2.

Connecticut's Remediation Standard Regulations (RSRs)

Connecticut's Remediation Standard Regulations provide detailed regulations and standards that may be used at any site to determine whether or not remediation of contamination is necessary to protect human health and the environment.

CT RSRs Volatilization Criteria: These criteria address the potential that subsurface contaminants may volatilize, migrate upward, and impact the air quality in buildings that overlie the contamination. The volatilization criteria set the limits of contaminants in soil vapor and groundwater that will not cause adverse impact to people in these buildings and are established to protect human health from volatile substances in shallow groundwater that may migrate from groundwater and enter overlying buildings. The volatilization criteria for groundwater vary depending on whether the overlying building is used for residential or industrial / commercial purposes. In cases where the industrial / commercial volatilization criteria are appropriate, an Environmental Land Use Restriction must be recorded.

Where to Get More Information on CT's remediation standard regulations:

<http://www.dep.state.ct.us/wtr/regs/remediation/rsr.pdf>

Why Does EPA Recommend this Proposed Plan?

EPA recommends this proposed plan because it is protective of human health and the environment, while at the same time being cost effective. Although the proposed plan does not reduce the levels of contamination through treatment, it provides a high level of overall protection for human health at a reasonable cost. To reduce the levels of contamination in groundwater would cost over 10 times more than the proposed action without providing considerably greater protection of human health. EPA believes the proposed plan achieves the best balance among the criteria used to evaluate various alternatives. The action being proposed provides both short-term and long-term protection of human health and the environment, and attains all Federal and State applicable or relevant and appropriate environmental requirements for this Site.

A Closer Look at EPA's Proposal

After careful study of the Old Southington Landfill Site, and weighing the pros and cons of different alternatives, EPA proposes the following plan to reduce risks associated with groundwater contamination.

Alternative GW2: Institutional Controls/Groundwater Monitoring/ Building Ventilation/Vapor Barriers

Under this alternative, the following measures would be implemented:

- Institutional controls in the form of Environmental Land Use Restrictions (ELURs) as defined in Connecticut's Remediation Standard Regulations (RSRs) on properties or portions of properties where groundwater VOC concentrations exceed the CT RSR volatilization criteria. The institutional controls will remain in place as long as groundwater VOC concentrations exceed the criteria.
- Monitoring of groundwater, consistent with the requirements of the CT RSRs volatilization criteria and other federal requirements, to insure the protectiveness of this alternative in the future.
- Existing buildings where the CT RSRs commercial/industrial volatilization criteria are exceeded, would require, consistent with the CT RSRs, ventilation to control VOCs in vapor beneath existing buildings; engineering controls such as vapor barriers would be required to control VOCs for new buildings.
- Five-year site reviews to evaluate the effectiveness and adequacy of the remedial measure.

Institutional Controls

As defined by the CT RSRs, ELURs would be placed on the portions of properties where VOCs in groundwater exceed the RSR volatilization criteria. The ELURs would address VOC volatilization issues on any parcel of land or portion thereof overlying areas where groundwater exceeds the CT RSRs residential or commercial/industrial volatilization criteria, as appropriate.

Building Ventilation/Vapor Barriers (Mitigation Measures) (see info box on page 11)

Building ventilation (subslab depressurization) would be implemented in existing buildings located over portions of properties where VOCs in groundwater exceed the CT RSRs commercial / industrial volatilization criteria. Building ventilation controls would be used to either prevent migration of VOC vapors into buildings, or to control the level of VOCs in vapors beneath existing buildings. Similarly, vapor barriers or subslab depressurization would be used to control vapors in new buildings.

Monitoring

Monitoring for the groundwater remedy will be conducted in accordance with the CT RSRs volatilization criteria and other federal requirements. Compliance wells will be installed at appropriate locations, to collect groundwater to evaluate long term fluctuations in accordance with the monitoring requirements of the CT RSRs and to ensure the protectiveness of the remedy in the future.

Five-Year Reviews

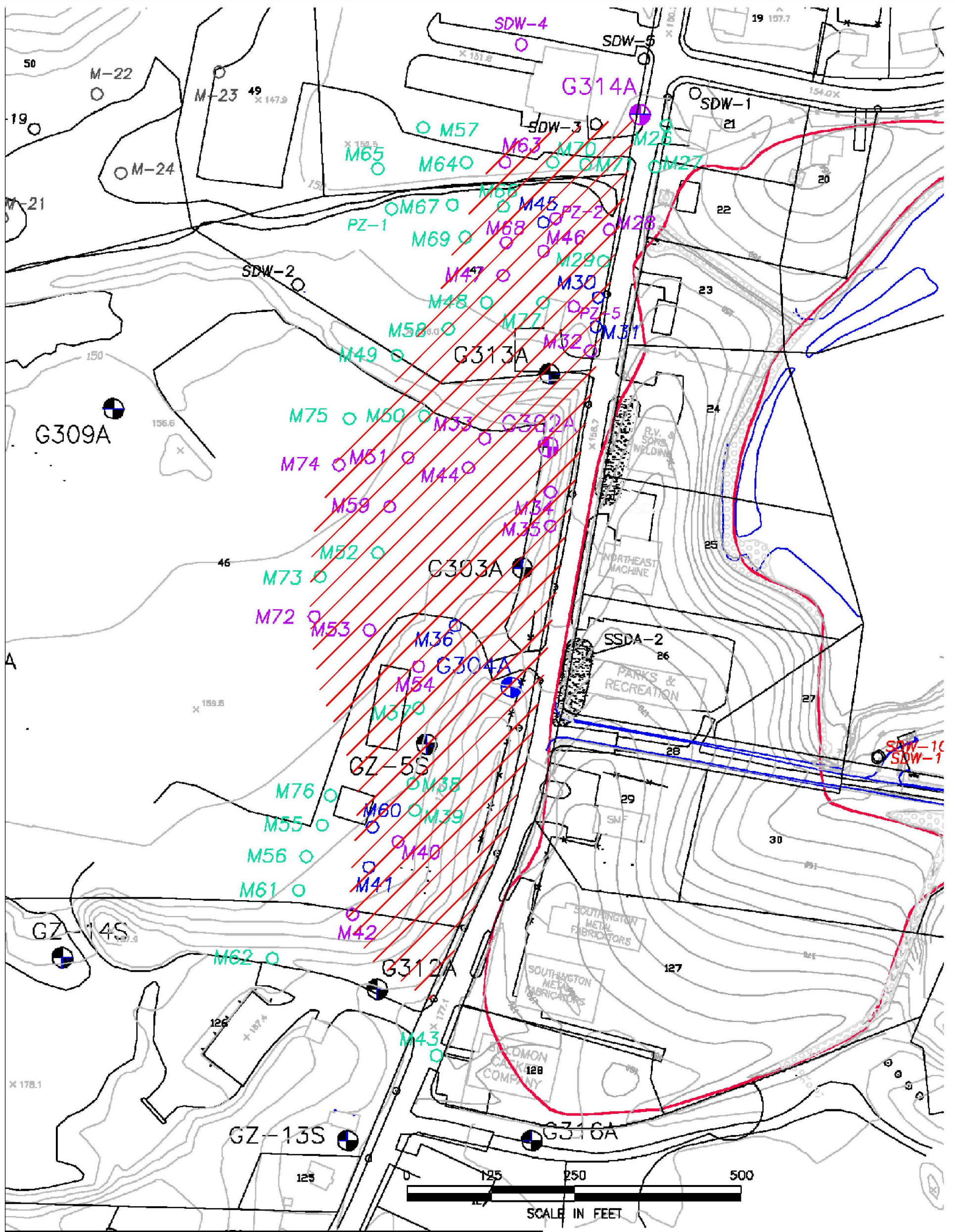
Five-Year Site reviews would be performed to confirm the effectiveness and adequacy of measures implemented under Alternative GW2.

Environmental Land Use Restrictions

An Environmental Land Use Restriction (ELUR) is a binding agreement between a property owner and the Connecticut Department of Environmental Protection which is recorded on the municipal land records. The purpose of an ELUR is to minimize the risk of human exposure to pollutants by preventing specific uses or activities at a property or a portion of a property. Because the ELUR is recorded on the land records, the requirements of the ELUR are binding on the present and future owners and occupants of the property. For new construction, preventive measures such as vapor barriers will be required.

Where to Get More Information on CT's Environmental Land Use Restrictions:

<http://dep.state.ct.us/pao/perdfact/elur.htm>



LEGEND:

EXISTING/PREVIOUS SAMPLING POINTS

G304A ● MICROWELL POINTS - SEPTEMBER 2004

SDW-1 ○ SMALL DIAMETER MONITORING WELLS

M19 - 25 ○ MICROWELL POINTS - SEPTEMBER 2004

EXISTING/PREVIOUS SAMPLING POINTS EXCEEDING RESID. VOL. RSRs

EXISTING/PREVIOUS SAMPLING POINTS EXCEEDING COMM. VOL. RSRs

CURRENT SAMPLING POINTS - OCTOBER/NOVEMBER 2005

PZ-1 ○ PIEZOMETER (does not exceed CT RSRs resid. volatilization)

M28 - 77 ○ MICROWELL POINTS (does not exceed CT RSRs resid. volatilization)

MICROWELL/PIEZOMETER POINTS EXCEEDING RESIDENTIAL VOLAT. RSRs

MICROWELL POINTS EXCEEDING COMMERCIAL VOLAT. RSRs

EXTENT OF STUDY SITE



SHALLOW GROUNDWATER PLUME



OLD SOUTHWINGTON LANDFILL SUPERFUND SITE
SOUTHWINGTON, CONNECTICUT

**SHALLOW GROUNDWATER
VOC PLUME**

SCALE: AS SHOWN

Source: Adapted from figure developed by MACTEC, Engineering and Consulting, Inc.

How Does EPA Choose a Final Plan?

EPA uses nine criteria to compare alternatives and select a final remedy that meets the statutory goals of protecting human health and the environment, maintaining protection over time and minimizing contamination. These nine criteria make up the assessment process used for all Superfund sites. The following list highlights these nine criteria and some questions EPA must consider in selecting a final remedy. Additional discussion of these nine criteria can be found in Section 4 of the Old Southington Landfill Amended Feasibility Study Report, which is part of the Administrative Record. The Administrative Record, located in the Southington Public Library and at the EPA office in Boston, is a collection of documents generated during the investigation of the Old Southington Landfill Site that form the basis for selection of the remedy. Additional information about the Old Southington Landfill Superfund Site is also available on the EPA New England website: www.epa.gov/ne/superfund/sites (Type "old southington" into search box).

Threshold Criteria

1. **Overall protection of human health and the environment:** Will the alternative protect human health and plant and animal life on and near the area? The chosen plan must meet this criterion.
2. **Compliance with applicable or relevant and appropriate requirements (ARARs):** Does the alternative meet all pertinent federal and state environmental statutes, regulations, and requirements? The chosen plan must meet this criterion.

Balancing Criteria

3. **Long-term effectiveness and permanence:** How reliable will the alternative be at long-term protection of human health and the environment? Is contamination likely to present a potential risk again?
4. **Reduction of toxicity, mobility or volume through treatment:** Does the alternative incorporate treatment to reduce the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present?

5. **Short-term effectiveness:** How soon will risks be adequately reduced? Are there short-term hazards to workers, the community, or the environment that could occur during the remedial action?
6. **Implementability:** Is the alternative technically and administratively feasible? Are the goods and services needed to implement the alternative (e.g., treatment machinery, space at an approved disposal facility) readily available?
7. **Cost:** What is the total cost of constructing and operating the alternative? Costs presented in this document represent the present worth costs of construction, operations, and monitoring for the anticipated lifetime of the alternative.

Modifying Criteria

8. **State acceptance:** Do state environmental agencies agree with the recommendations? What are their preferences and concerns?
9. **Community acceptance:** What suggestions or modifications do residents of the community offer during the comment period? What are their preferences and concerns?

Of these nine criteria, protection of human health and the environment and compliance with ARARs are considered threshold criteria that must be met for a candidate alternative to be selected. The next five criteria, called balancing criteria, are used to evaluate and compare the elements of the alternatives that meet the threshold criteria. This comparison evaluates which alternative provides the best balance of trade-offs with respect to the balancing criteria. State and community acceptance are considered modifying criteria factored into a final balancing of all criteria to select a remedy. Consideration of state and community comments may prompt EPA to modify aspects of the preferred alternative or decide that another alternative provides a more appropriate balance.

Alternatives Considered for the Old Southington Landfill Site

EPA considers a full range of options to address contamination and risks at a Superfund site before selecting a remedy (see Section 3 of the Amended Feasibility Study). Many options are screened out early in the process because site-specific conditions render them ineffective and/or technically or administratively infeasible. Others are eliminated because they are cost prohibitive to implement. The options, or remedial alternatives, that survived the initial screening and were considered for the Old Southington Landfill site are summarized below.

Alternative GW1: No Action

The No Action alternative would not involve any type of work other than Five Year Reviews. No monitoring data would be generated and no institutional controls would be used to restrict land use. This alternative serves as a baseline for comparison to other alternatives.

Cost: \$30,000

Alternative GW2: Institutional Controls/Groundwater Monitoring/ Building Ventilation/Vapor Barriers

- Institutional controls in the form of Environmental Land Use Restrictions (ELURs) as defined in Connecticut's Remediation Standard Regulations (RSRs) on properties or portions of properties where groundwater VOC concentrations exceed the CT RSR volatilization criteria. The institutional controls will remain in place as long as groundwater VOC concentrations exceed the criteria.
- Long term Monitoring of groundwater, consistent with the requirements of the CT RSRs volatilization criteria and other federal requirements, to insure the protectiveness of this alternative in the future.
- Ventilation systems, consistent with CT RSRs, to control VOC vapors beneath existing buildings where the CT RSRs commercial/industrial volatilization criteria are exceeded; engineering controls such as vapor barriers to prevent migration of VOCs for newly constructed buildings.
- Five-year site reviews to evaluate the effectiveness and adequacy of the remedial measure.

Cost: \$226,000 to \$695,000

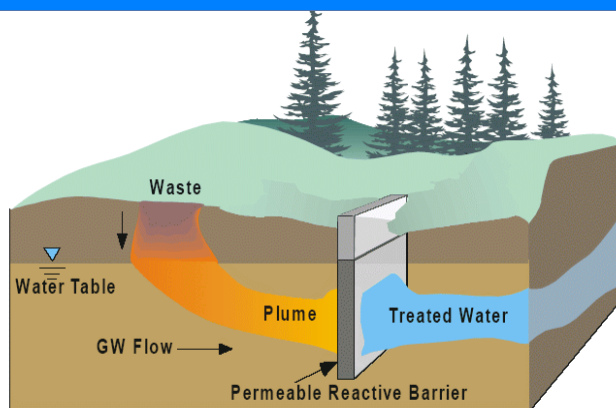
Alternative GW3: Permeable Reactive Barrier (PRB) / Institutional Controls / Groundwater Monitoring / Building Ventilation / Vapor Barriers

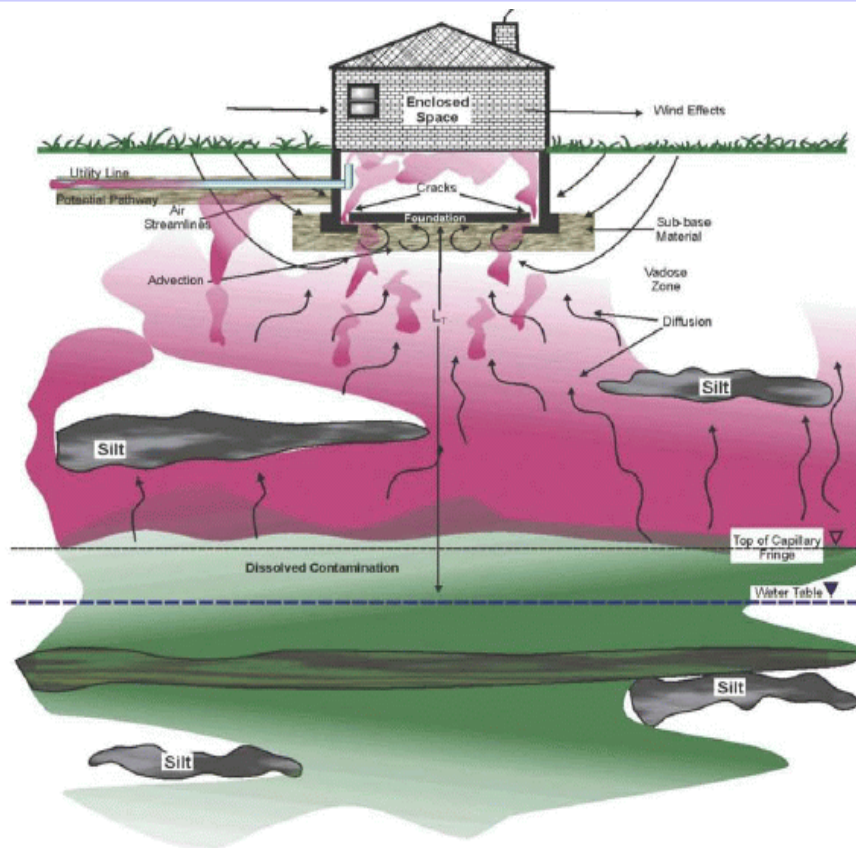
- Treatment of contaminated groundwater with a PRB to reduce shallow downgradient groundwater VOC levels below CT RSRs commercial/industrial volatilization (vapor intrusion) criteria. The PRB will be located immediately downgradient of western portions of the OSL cap and adjacent to areas of groundwater RSR exceedences.
- Institutional controls in the form of Environmental Land Use Restrictions (ELURs) as defined in Connecticut's Remediation Standard Regulations (RSRs) on properties or portions of properties where groundwater VOC concentrations exceed the CT RSR volatilization criteria. The institutional controls will remain in place as long as groundwater VOC concentrations exceed the criteria.
- Long term Monitoring of groundwater, consistent with the requirements of the CT RSRs volatilization criteria and other federal requirements, to insure the protectiveness of this alternative in the future.
- Ventilation systems, consistent with CT RSRs, to control VOC vapors beneath existing buildings where the CT RSRs commercial/industrial volatilization criteria are exceeded; engineering controls such as vapor barriers to prevent migration of VOCs for newly constructed buildings.
- Five-year reviews to evaluate the effectiveness and adequacy of the remedial measure.

Cost: \$10,700,000 to \$12,500,000

A **permeable reactive barrier** or PRB is a wall built below ground to clean up polluted groundwater. The wall is permeable, which means it has tiny holes that allow groundwater to flow through it. Reactive materials in the wall trap harmful chemicals or change the chemicals into harmless ones. Clean groundwater flows out the other side of the wall.

A PRB is built by digging a long, narrow trench in the path of the polluted groundwater. The trench is filled with a reactive material that can clean up the harmful chemicals. Iron, limestone, and carbon are common types of reactive materials that can be used. The reactive materials may be mixed with sand to make it easier for water to flow through the wall, rather than around it.





“Vapor Intrusion” is the migration of volatile chemicals from the subsurface into overlying buildings. Volatile chemicals in buried wastes and/or contaminated groundwater can emit vapors that may migrate through subsurface soils and into indoor air spaces of overlying buildings in ways similar to that of radon gas seeping into buildings. In some cases, the vapors may accumulate in buildings to levels that may pose an unacceptable risk of chronic health effects. Two common technologies designed to mitigate vapor intrusion into buildings and structures include vapor barriers and subslab ventilation.

VAPOR BARRIERS

Vapor barriers are effective mitigation measures primarily for new construction. A membrane structure in sheet form is typically fastened to the foundation walls with a batten-type attachment or extrusion welded to cast-in-place anchor systems below the concrete floor slab. The membrane is commonly comprised of high density polyethylene, which offers excellent chemical resistance and is relatively impervious to offending soil vapors. All seams and penetrations must be adequately sealed to form an effective barrier. Special care must be taken to avoid penetrating the membrane during the construction of the overlying slab. Protective fabric or sand/gravel are effective cushions for protection against punctures during subsequent construction activities. As an alternative to rolled HDPE sheet, cold sprayed membranes are becoming more common. These barriers are actually sprayed into place then similarly protected against puncture from subsequent construction activities with additional fabric layers or sand. Generally, vapor barrier systems are designed to block the migration of soil vapor from entering the overlying structure.

SUBSLAB VENTILATION SYSTEMS

Subslab ventilation systems (also called subslab depressurization) are common and reliable technologies for mitigation of offending soil vapors within existing structures. Trenches are initially cut through the existing concrete floor slab. Perforated suction pipes surrounded by crushed rock are installed below the slab level. The number and location of suction pipes that are needed depends on how easily air can move in the crushed rock and soil under the slab. The spacing is typically based on visual inspection, from diagnostic tests, and/or from experience. The suction pipes are connected to a header system, which can be either buried below the slab, or hidden within utility chases or wall structures. A vacuum fan or blower connected to the suction pipes draws the soil vapor from below the structure and then releases it into the outdoor air. The fan runs continuously and essentially reduces the pressure below the slab to a level lower than the ambient pressure within the overlying structure thereby mitigating the potential migration of the soil vapors into the structure.

Evaluation of Alternatives

EPA uses nine criteria (described on Page 8) to balance the advantages and disadvantages of various remedial alternatives. As summarized below, EPA has evaluated how well each of the alternatives meets the first seven criteria. Once comments from the state and the community are received, EPA will select the final plan. A more detailed evaluation of the alternatives can be found in the Feasibility Study. The proposed remedy, **GW2** has been **highlighted** below.

Overall Protection of Human Health and the Environment

There are no adverse impacts to wetlands or surface waters under any of the alternatives. Likewise, there is no risk to ingestion of VOC in groundwater under any of the alternatives.

Except for the No Action Alternative (GW1), the alternatives provide for protection against exposure to VOCs volatilizing from shallow groundwater. Alternative **GW2**, through the use of ELURs, relies on institutional controls to protect against exposure to VOCs volatilizing from shallow groundwater on any parcel of land or portion thereof overlying areas where groundwater impacted by the Study Site exceeds the CT RSRs residential or commercial/industrial volatilization criteria. Where there are existing buildings over areas where groundwater impacted by the Study Site exceeds the CT RSRs commercial/industrial volatilization criteria, building ventilation (subslab depressurization), consistent with the CT RSRs, provides protection by preventing migration of VOC vapors into, or controlling the level of VOCs in vapor beneath or in, any existing buildings. For new buildings engineering controls such as vapor barriers will provide protection from VOC vapors.

Overall protection under Alternative GW3 is provided by a combination of shallow groundwater treatment and the same institutional controls / engineering controls identified above for **GW2**. This protection is achieved through reduction of contaminant concentrations in groundwater to meet CT RSRs criteria for vapor intrusion and limiting exposure to any residual contaminants through ELURs, building ventilation and vapor barriers. Groundwater protection is improved under Alternative GW3 compared to Alternative **GW2** because contaminated groundwater is being treated.

Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs)

Alternative **GW2** and GW3 would meet Chemical-Specific ARARs for water quality, Action-Specific ARARs, and any identified Location-Specific ARARs. Alternative GW1 would not meet Chemical-Specific ARARs for volatilization of VOCs from shallow groundwater.

Long-Term Effectiveness and Permanence

The risk with respect to groundwater residual contamination under alternatives GW1 and **GW2** is high as the source of the vapor intrusion (contaminated groundwater) is not addressed. The risk with respect to groundwater under GW3 is low as contaminated groundwater is addressed although the effectiveness of this alternative is somewhat uncertain as well as the time it takes to achieve the cleanup levels.

Alternatives **GW2** and GW3 provide for protection against exposure to VOCs volatilizing from shallow groundwater through institutional and engineering controls. These controls are reliable as long as they are properly implemented and maintained. Alternatives **GW2** and GW3 rely on institutional and engineered controls to protect against exposure to VOCs volatilizing from shallow groundwater on any parcel of land or portion thereof overlying areas where groundwater impacted by the Study Site exceeds the CT RSRs vapor intrusion criteria. Where there are existing buildings over areas where groundwater impacted by the Study Site exceeds the CT RSRs vapor intrusion criteria, building ventilation (or vapor barriers), consistent with the CT RSRs, provides protection by preventing migration of VOC vapors into, or controlling the level of VOC in vapor beneath or in, any existing building or new construction.

Alternative GW3, which employs PRB is considered the most effective alternative to achieve long-term effectiveness and permanence. If designed and constructed properly, this alternative combines the advantages of an effective groundwater treatment technology (PRB) with the institutional and engineered controls of Alternative **GW2**. The PRB is anticipated to reduce groundwater VOC concentrations to levels below the CT RSR criteria for vapor intrusion.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Neither Alternatives GW1 nor **GW2** result in a reduction of TMV through treatment. Alternative GW3 reduces the toxicity, mobility, and volume of contaminants through treatment of contaminated groundwater. Under this alternative shallow contaminated groundwater passing through the PRB would be treated. This alternative destroys and removes the contaminants from the shallow groundwater migrating downgradient from the landfill. It is estimated that the landfill

will continue to emit contamination into the groundwater for decades. Groundwater in the shallow plume east of the PRB would be treated as it passed through the wall. Groundwater that had already passed the location of the PRB at the time of construction would take a longer time to reach cleanup levels.

Short-Term Effectiveness

Neither Alternative GW1 nor Alternative **GW2** would significantly impact the community, workers, or the environment. Alternative GW1 would not meet the remedial response objectives. Alternative **GW2** would meet remedial response objectives within six to twelve months. This time period would be required to obtain the necessary ELURs and implement building ventilation, if necessary.

Alternative GW3 has installed treatment components that may create relatively minor visual and auditory nuisances. The potential for remediation workers to have direct contact with contaminants in soil or groundwater occurs during installation, maintenance and monitoring operations. Excavation activities under Alternative GW3 would require significant disruption to the impacted surface soils along a major roadway and to the community. Environmental drilling to install monitoring wells and/or extraction and injection wells would occur under Alternative GW3. Environmental drilling and excavation may produce contaminated soil cuttings and liquids that present some risk to remediation workers at the site. Groundwater monitoring will have minimal impact on workers responsible for periodic sampling. No off-site water discharges occur under GW3.

Implementability

Alternatives GW1 and **GW2** could be easily implemented and would not obstruct any additional remedial actions, if necessary.

Institutional controls would be readily implementable and enforceable. Groundwater monitoring would be easily implementable and qualified personnel and equipment is readily available. Building ventilation and vapor barriers would be easily implemented using standard, reliable techniques.

Permeable reactive barriers under Alternative GW3 would be moderately difficult to construct at OSL because of the varied surface terrain and the extensive length and depth of trenching required. This alternative would also likely require placement of the PRB on private property immediately downgradient of the landfill as well as significant disruption on Old Turnpike Road, a major road in the community. However, PRBs have been successfully installed at other similar sites and expected construction difficulties are not considered insurmountable. PRBs are expected to be easy to operate since there is no active operating equipment, no power requirements, no special techniques or facility relocation required and no water or air discharges. PRB treatments are considered a moderately reliable technology.

However, site-specific pilot or design studies are considered necessary in order to maximize effectiveness.

Cost

There would be relatively minor costs associated with Alternative GW1, as no remedial measures would be implemented. Alternative GW1 would, however require the performance of Five Year Reviews estimated at \$5,000 (or more) every five years over 30 years. The present worth cost range for Alternative **GW2** is \$226,219 to \$695,240. The present worth cost range for Alternative GW3 is \$10.7M 12.5M

State Acceptance

State acceptance will be determined after the public comment period.

Community Acceptance

Community acceptance will be evaluated based on comments received during the comment period.

During the 30-day formal comment period, EPA will accept written comments and hold a formal public hearing to accept formal verbal comments. State and community acceptance are considered modifying criteria factored into a final balancing of all criteria to select a remedy. Consideration of state and community comments may prompt EPA to modify aspects of the preferred alternative or decide that another alternative provides a more appropriate balance.



Next Steps

Later this summer, EPA expects to have reviewed all comments and will sign a final Record of Decision (final ROD) by September 30 describing the chosen plan for the groundwater and confirming that previous measures (landfill cap and gas collection system) undertaken in the first ROD are safe and effective. The final ROD and a summary of responses to public comments will then be made available to the public at the Southington Public Library, on the EPA website, and at the EPA Records Center in Boston. EPA will announce the decision to the community through the local news media and a general mailing.

A Long Term Monitoring Program for both the 1994 and Final RODs will be put in place following the ROD. The final ROD long term monitoring plan will monitor groundwater to assure that there are no adverse impacts to other areas by vapor intrusion in the future, as well as to confirm that there are no adverse impacts to the nearby aquifer that the State of Connecticut has classified as a GA aquifer (water suitable for drinking without treatment). Studies will continue to determine the source of methane at and north of the landfill and determine whether mitigation measures are warranted. Fish will be monitored in Black Pond to assure continued protection to human health.

You Can Comment On EPA's Proposal

During the 30-day public comment period from June 22 to July 24, 2006, EPA will accept formal written comments and hold a public hearing on July 6, 2006. EPA uses this public input to improve the proposal. Your formal input and ideas will become part of the official public record. The transcript of comments and EPA's written responses will be issued in a document called a Responsiveness Summary when EPA releases the final decision for the Old Southington Landfill Superfund Site.

There are three different ways in which individuals can provide EPA with their comments on this Proposed Plan:

1. Comments can be submitted in writing to EPA.
2. Comments can be sent to the EPA Remedial Project Manager by email at: silva.almerinda@epa.gov.
3. Comments can be spoken into the official public record during the public hearing on July 6, 2006.

EPA encourages anyone with a concern or comment regarding the proposed approach to express his or her opinion during the comment period. All comments are welcome. Any of the three mechanisms above are acceptable for providing comments and all of the comments are given equal weight.

Two types of public meetings will occur with respect to the Proposed Plan. The first will be an informational meeting to explain the proposed decision and answer any questions that may arise. Comments that are made during this meeting will not be part of the "official record".

The second type of meeting, a public hearing, will occur during the official comment period. At this meeting, EPA will provide a brief summary of the proposal and then the floor will be open for spoken comments. A stenographer will be present to record all of the comments offered during this comment session. EPA does not respond to any of the comments made at this meeting other than to indicate the time limits or request clarification. At the close of the comments session, if time permits, EPA will be available to answer questions.

The comment period will last for thirty days unless an extension is requested. EPA will typically allow a 30-day extension if requested. At the end of the comment period, EPA will assemble and evaluate all of the comments submitted. Appropriate revisions to the Proposed Plan will be made based on these comments. EPA will then sign the Record of Decision describing the chosen plan. The ROD and a summary of responses to public comments will be made available to the public at the Southington Public Library and through EPA Records Center in Boston.

For more information about the proposed plan, all of the technical and public information publications prepared to date for the site are available for public review at the following locations:

EPA Records Center
1 Congress Street,
Suite 1100
Boston, MA 02114-2023
(617) 918-1453
Monday - Friday, 10:00 a.m.-noon, 2:00 p.m.-5:00 p.m.

Southington Public Library
255 Main Street
Southington, CT
Open Monday - Thursday, 9:00 am - 9:00 pm
Open Friday & Saturday, 9:00 am - 5:00 pm
Closed Saturdays in July and August

Use This Space to Write Your Comments or to be added to the mailing list

EPA encourages you to provide your written comments and ideas about the options under consideration for addressing the contamination at the Old Southington Landfill Superfund Site. You can use the form below to send written comments, or submit them via the internet. If you have questions about how to comment, please call **Jim Murphy of EPA's Community Affairs Office at 617-918-1028 or toll free at 1-888-372-7341, extension 81028**. Submit written comments, which must be postmarked (in the case of U.S. Mail) or received (in the case of E-mail) no later than **July 24, 2006**, to:

Almerinda Silva
Remedial Project Manager
EPA New England
1 Congress Street
Suite 1100 (HBT)
Boston, MA 02114 - 2023
E-mail: silva.almerinda@epa.gov

(Attach sheets as needed)

Comment Submitted by: _____

Mailing list additions, deletions or changes

Please indicate if you would like to:

- ☐ be added to the site mailing list
- ☐ note a change of address
- ☐ be deleted from the mailing list

Name : _____

Address: _____

Please check the appropriate box and fill in the correct address information above. Send to Almerinda Silva at above postal or e-mail address.



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Boston, Massachusetts 02114-2023

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Proposed Plan for Old Southington Landfill Superfund Site

<i>Information Meeting:</i>	<i>Wednesday June 21, 2006</i>	<i>6:30 p.m.</i>	<i>Southington Town Hall</i>	<i>75 Main Street</i>
<i>Public Hearing:</i>	<i>Thursday, July 6, 2006</i>	<i>6:30 p.m.</i>	<i>Southington Library & Museum</i>	<i>255 Main Street</i>